Seventh SG13 Regional Workshop on "Standardization of Future Networks towards Building a Better Connected Africa"

Abuja, Nigeria, 3-4 February 2020

Global updates from AI/ML And Opportunities for Africa

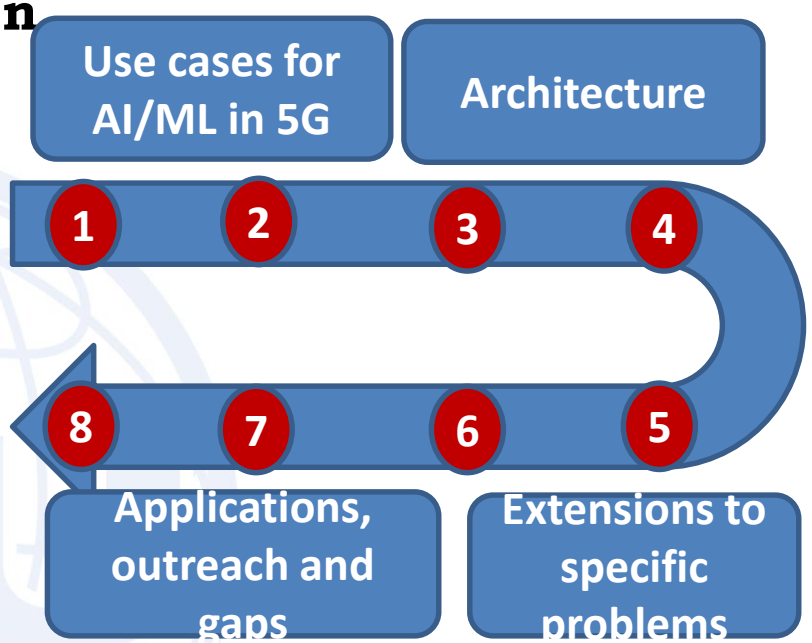
Vishnu Ram

Vishnu.n@ieee.org

NOTE- This work is done under the ITU-T FG ML5G

ITU Joint activities/Outreach/workshops in 2019 for ML in 5G

1. **Workshop presentations (in addition to 3 FG ML5G workshops)**
   - Hangzhou – 5G innovation park launching with Hangzhou administration.
   - CTO CJK
   - Budapest CTO
   - Dubai 5G, Etisalat and Du
   - TSDSI, New Delhi – 2 presentations.
   - FUSECO Forum, Fraunhofer FOKUS.
- **Feedback to LF AI projects**
  - Project with ZTE
  - 2 Technical Advisory presentations
- **AMLD, Lausanne**
  - Networks track presentation and panel discussions
- **Academic paper**
  - IEEE comm magazine with UPF, Spain
- **Student projects**
  - 5 countries, 15+ students, 9 contributions.



Actively LS with ETSI ZSM, ETSI ENI, MPEG, ORAN, LF AI, IRTF.
Now, we received LS from IEEE, SG9, SG16

Opportunity #1

Global update and Status quo	Challenge	Opportunities for Africa
•Current use cases are just the tip of the iceberg. •Regional use cases are not included. •Current prescriptive way of use cases is biased.	Low Priority for regional use cases	**Automated, template based capturing of AI/ML use cases will lead to including representative use cases.**

- ITU Y.3172 includes ML Intent for capturing AI/ML use cases
- African academics, industry should take leadership in implementing this “Intent-based” ML.
- Documentation of regional use cases will influence ITU standards and further lead the world of AI/ML.

Immediate next step: form a working group to start use cases collection, documentation, using ITU standard.

Opportunity #2

Global update and Status quo	Challenge	Opportunities for Africa
•Data collection is tedious •It violates privacy •It is not interoperable	No implementation of interoperable standards for data handling.	**Generate regional, temporal, anonymised, open data sets. Generate regional, private, secure, data sets.**

- ITU Y.3174 includes data handling for collecting data
- Creation of regional data sets will unlock spurt of AI/ML usage in local industry.

Immediate next step: Contribute data sets and tools for ITU Africa ML Sandbox.

Opportunity #3

Global update and Status quo	Challenge	Opportunities for Africa
•Current ML is centralized in architecture. •Large number of cores, large data centers needed to host.	No interfaces for distributed AI/ML.	**African ML chain: create a chain of ML solutions, for regional problems, according to ITU standards.**

- ITU Y.3172 includes distributed ML chains
- Implementation of pan-African chain of ML solutions will be first in the world.

Immediate next step: Identify connected grid of hosting centers, implement ML chaining interfaces.

Opportunity #4

Global update and Status quo	Challenge	Opportunities for Africa
•Current test cases for AI/ML are incomplete and perhaps based on biased test data.	No work on regional test cases or KPIs.	**Test cases and procedures for regional ML models.**

- ITU Y.3173 includes evaluation mechanisms for Intelligence level of networks
- Testing, evaluation and benchmarking of AI/ML for 5G should be done in regional labs.

Immediate next step: for a WG for studying test cases for AI/ML models according to regional needs.

Opportunity #5

Global update and Status quo	Challenge	Opportunities for Africa
•ML models are biased	Availability of training data. Availability of trained ML models	**Setting up African ML marketplace will help local needs.**

- ITU ML marketplace includes mechanisms to select, train and deploy models.
- Creating an instance of ML marketplace in Africa will help.

Immediate next step: Contribute ML models for ITU Africa ML Marketplace.

Engage with ITU for ML in 5G

ITU AI Challenge

- Spread over **9 months** in 2020
- Bringing participants from all member countries of ITU.
- Four tracks, 2 rounds, 1 **conference**.
- Apply ML to IMT-2020 networks, (using and **validating** the ITU architecture)
- Encouraging **open** source
- **Mentoring** students

ITU Student projects

- Started in 2019 as a pilot
- Offer university students opportunity to work with ITU experts
- Identified projects in the area of 5G and AI/ML.
- Pilot had 5 countries, 15 students, 9 contributions
- Letter of Appreciation for student contributions (includes Nigeria).

References

[1] Supplement 55 to Y.3170-series: Y.ML-IMT2020-Use-Cases “Machine learning in future networks including IMT-2020: use cases” (https://www.itu.int/rec/T-REC-Y.Sup55-201910-I/en)
[2] ITU-T Y.3172 (https://www.itu.int/rec/T-REC-Y.3172/en)
[3] ITU-T Y.3173 (ML5G-I-151-R5)
[4] ITU-T Y.3174 (ML5G-I-148-R3)
[5] ML marketplace integration in future networks including IMT-2020 https://extranet.itu.int/sites/itu-t/focusgroups/ML5G/input/ML5G-I-167-R5.docx
[6] Optimization and deployment framework for ML models https://extranet.itu.int/sites/itu-t/focusgroups/ML5G/input/ML5G-I-171-R1.docx
[7] Requirements, architecture and design for machine learning function orchestrator https://extranet.itu.int/sites/itu-t/focusgroups/ML5G/input/ML5G-I-216.docx
[8] How to engage students in ITU’s work? https://extranet.itu.int/sites/itu-t/focusgroups/ML5G/output/ML5G-O-026.docx
[9] ITU Global Challenge in AI/ML https://extranet.itu.int/sites/itu-t/focusgroups/ML5G/input/ML5G-I-217-R1.docx

Color legend:
Public document,
Accessible via ITU-T member account,
Accessible via guest account for non members of ITU-T

Thank you!